Fusion3

F200 3D Printer

REPAIR:
FILAMENT MONITOR REPLACEMENT

Revision 2/3/2026

REPLACING THE FILAMENT MONITOR

If your filament monitor stops working and you need to replace it, follow these instructions.

BEFORE YOU BEGIN

PLEASE NOTE: Failure of the filament monitor itself is EXCEEDINGLY RARE. If you think your filament monitor needs to be replaced, PLEASE reach out to Fusion3 customer support first, for help in diagnosing the more common sources of spurious filament feed errors.

Your printer should be off and cold.

Unload filament.

Your printer should be unplugged.

Estimated repair time: 15 - 20 minutes.

Repair difficulty: Moderate

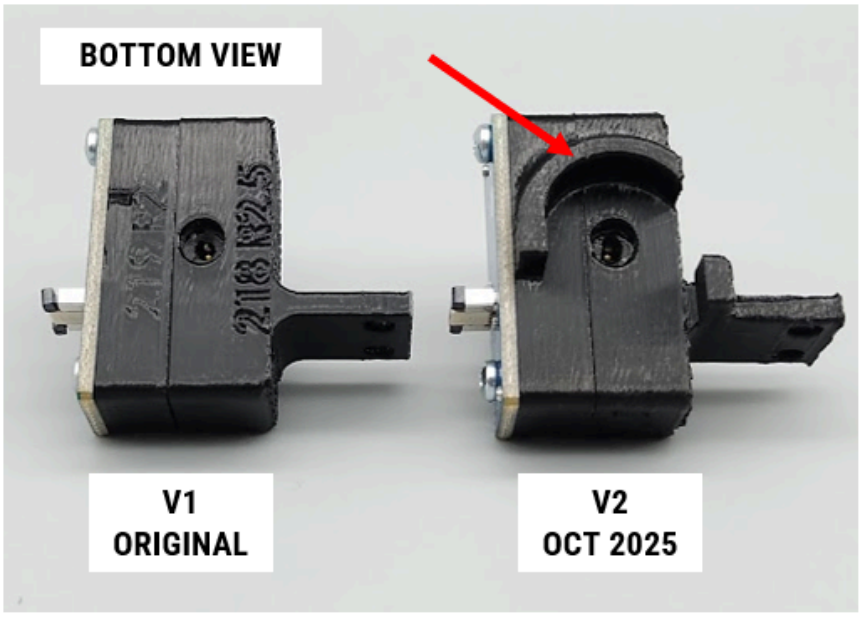
Tools required:

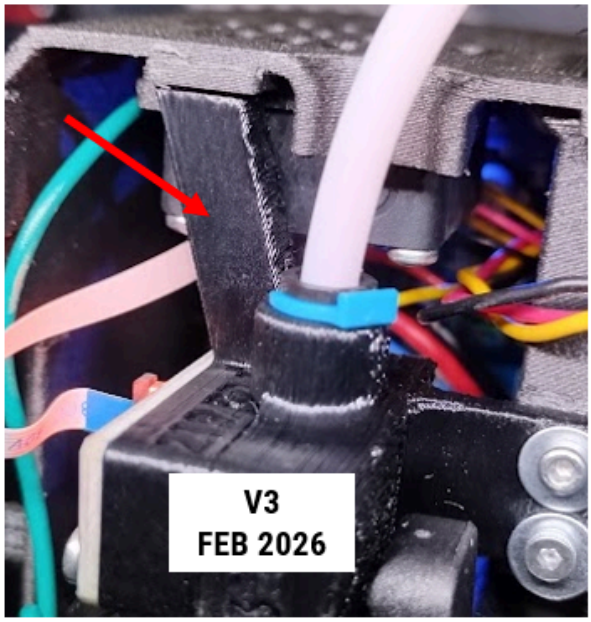
- 2.5mm hex drive (ball and straight end)
- 1.5mm hex drive
- "Black stick" aka non-metallic poking stick

Extra parts required:

- Replacement filament monitor
- 2x M2x6 SHCS
- 2x M3 washer

IMPORTANT: As of February 2026, we have 3 versions of the filament monitor in the field. V2 added a fence on the bottom to aid alignment. V3 adds a vertical arm to reduce shifting under load. You will have been sent the new (V3) design.

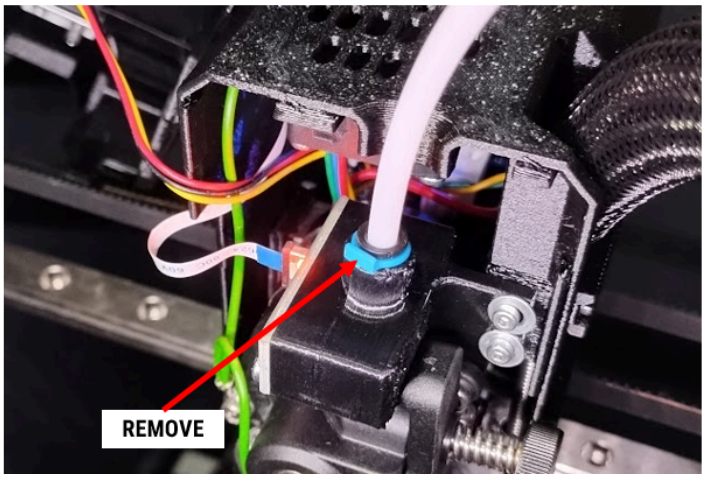


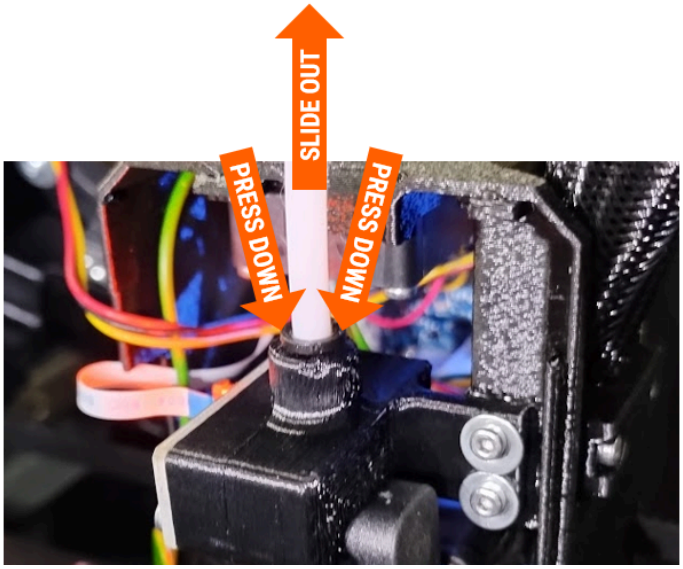


REMOVAL

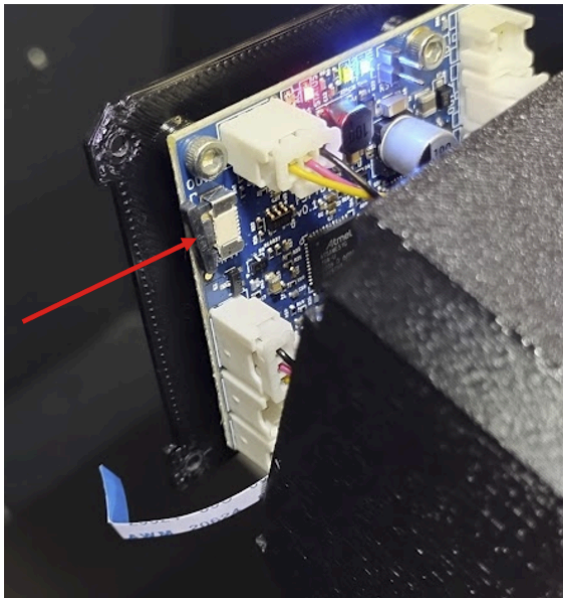
These instructions assume you are also replacing the filament monitor ribbon cable (recommended). If you are not replacing this cable, some steps may be skipped.

1. Remove the front toolhead housing, and rear toolboard panel. (INSTRUCTIONS).
2. Remove the blue C-clip at the top of the filament monitor. Press down on the black retaining ring and remove the filament feed tube.

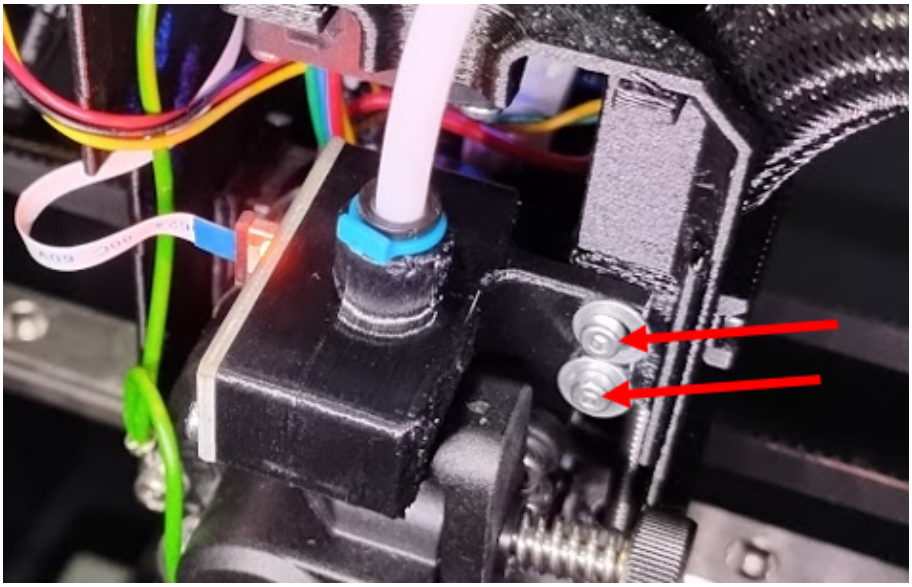




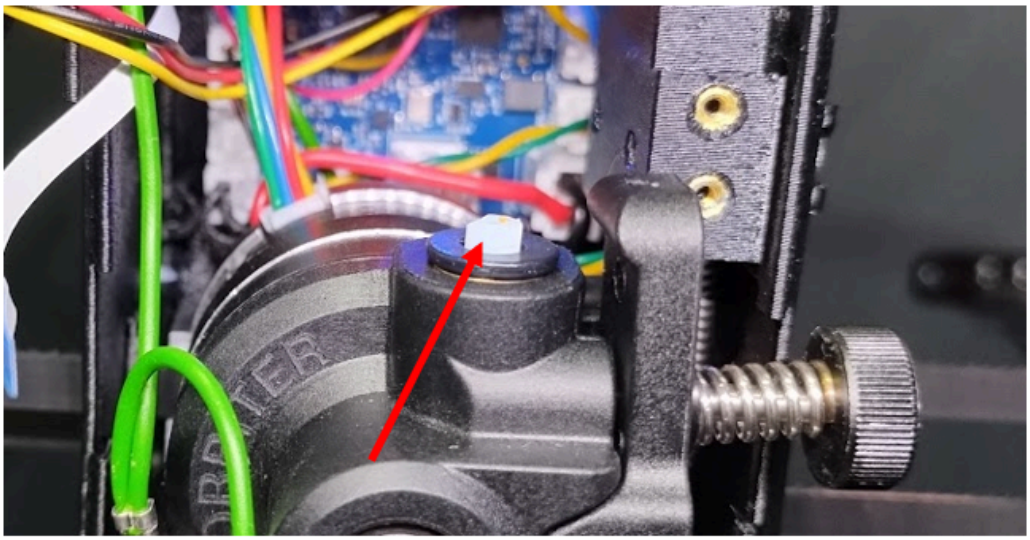
3. On the toolboard, open the ZIF connector that the ribbon cable is plugged into. Remove the cable. See HERE for more information on using these connectors.



4. Remove the 2x M2 SHCS that bolt the filament monitor onto the toolhead housing. You should discard these fasteners and use the new ones shipped with your new filament monitor.

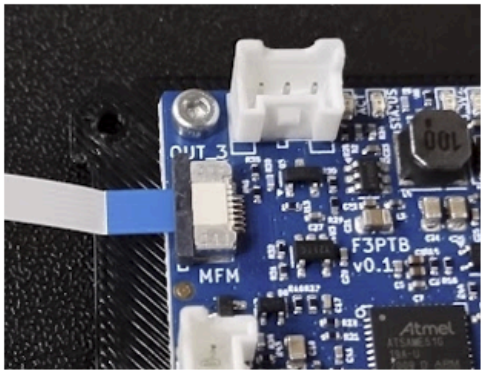


5. Remove the old filament monitor + ribbon cable from the printer.
6. Inspect the top of the extruder to make sure the PTFE liner is present.

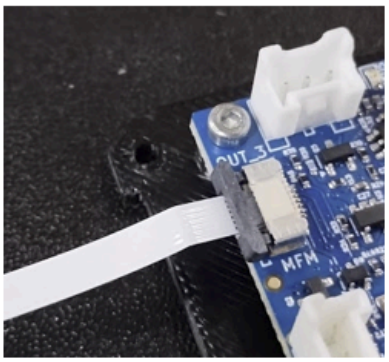


INSTALLATION

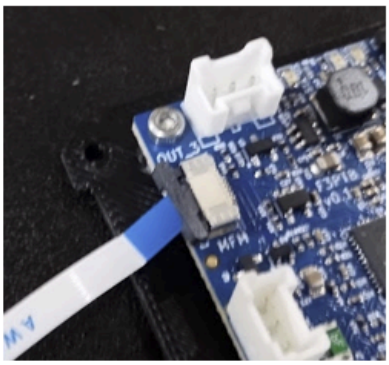
1. Install the new ribbon cable into the toolboard. See HERE for more information.



YES

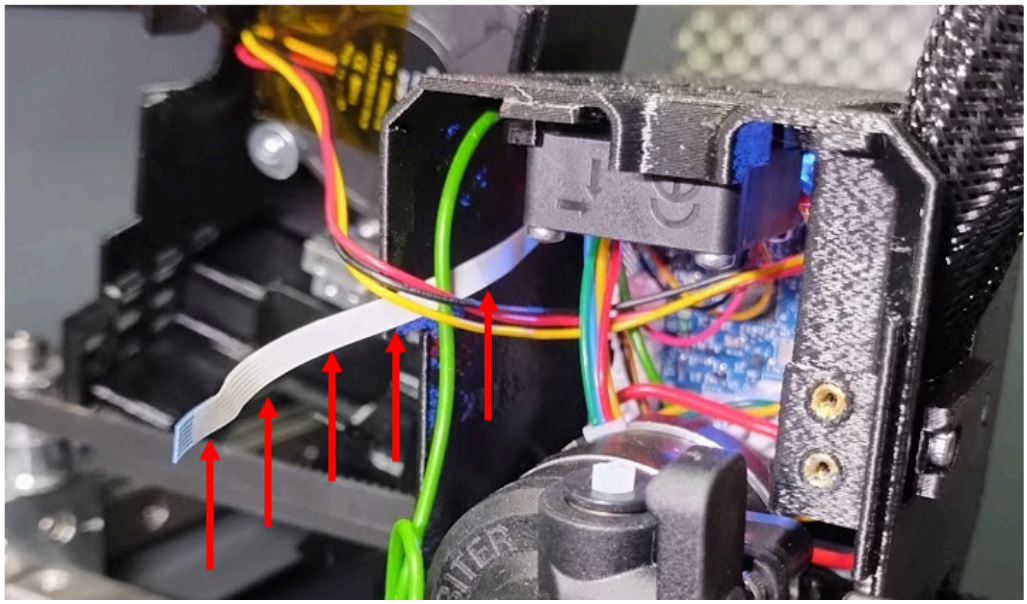


NO

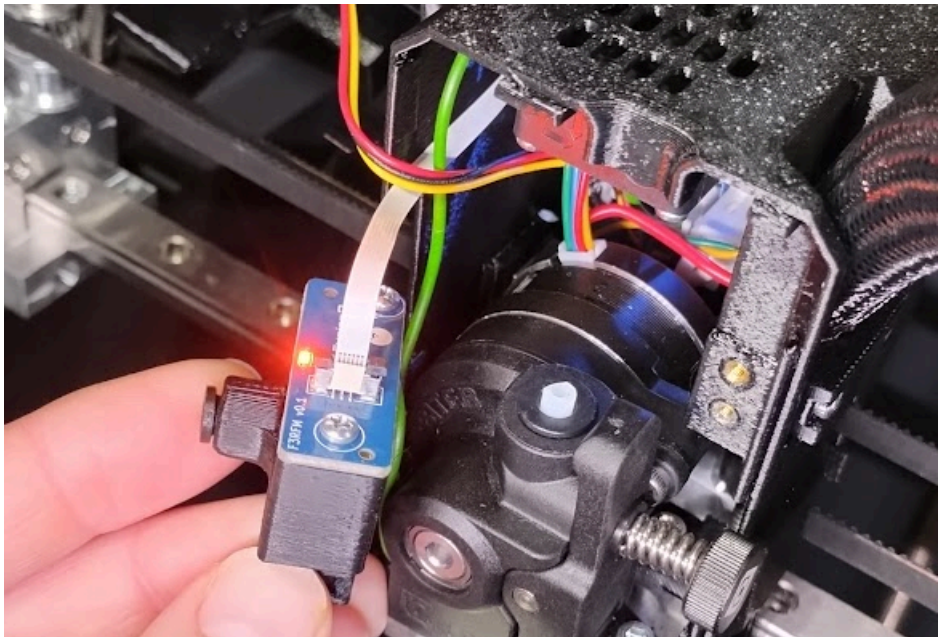


NO

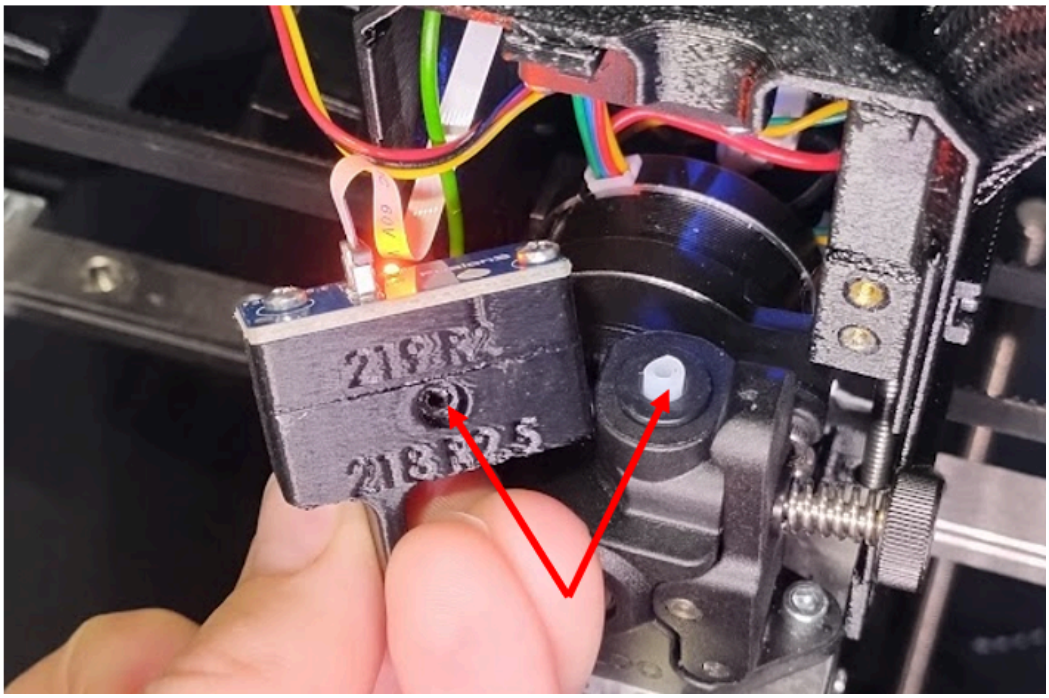
2. Close the toolboard section. Ensure the ribbon cable is routed forward along the left side of the toolhead, so that you can access the free end. (INSTRUCTIONS)

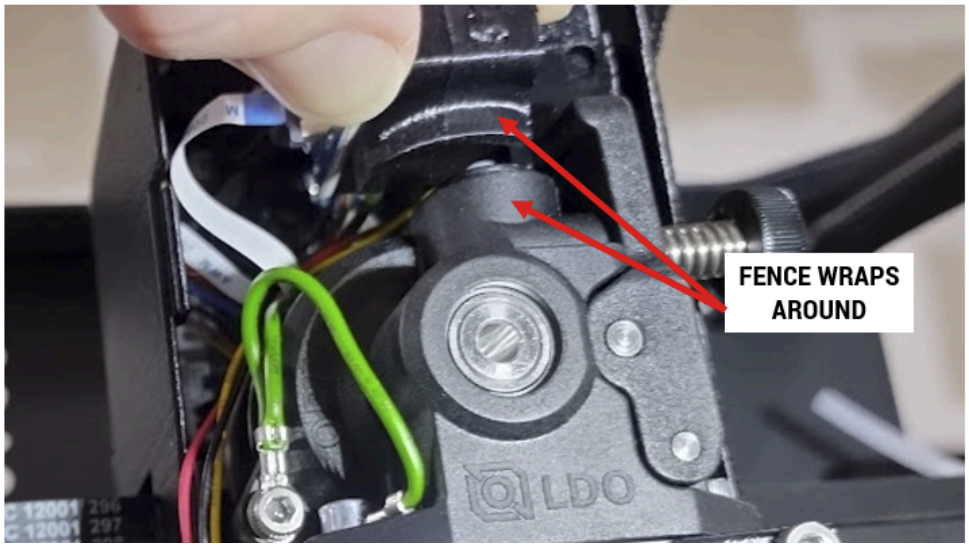


3. Install the ribbon cable onto the new filament monitor. See previous instructions in step 1 for handling the connector and ribbon cable.

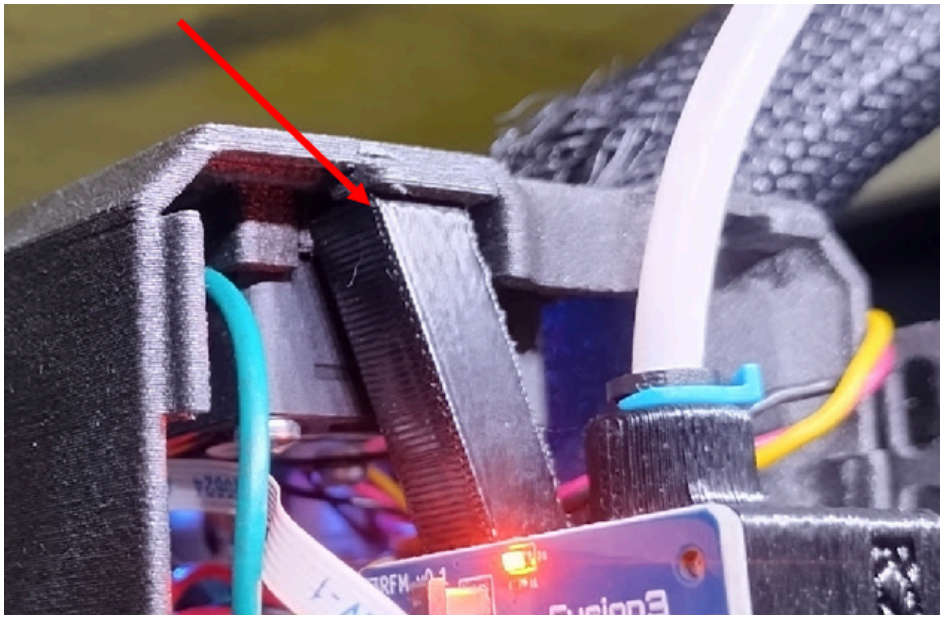


4. Position the new filament monitor above the extruder. The PTFE liner should fit into the pocket in the bottom of the filament monitor. The "fence" on the bottom of the filament monitor should fit around the top of the extruder as shown.

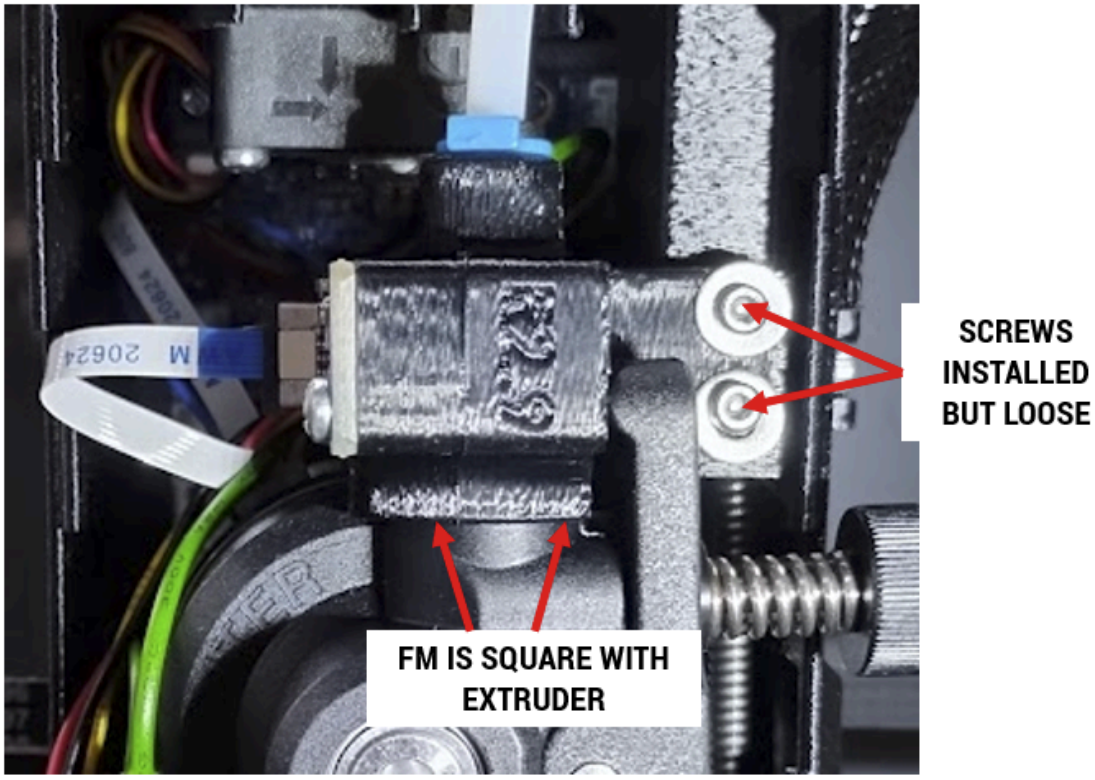


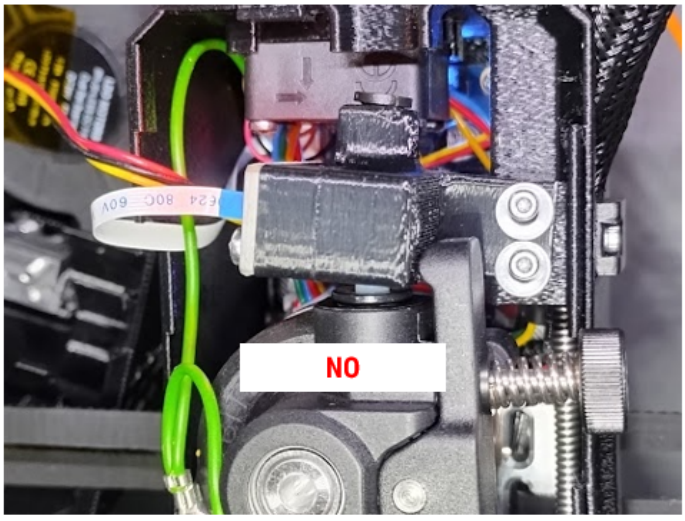


5. (V3 only) Make sure the arm touches the rear toolhead housing behind the front-to-rear toolhead alignment features. It should gently touch the housing, if excessive force is needed to get it in place, or you see the toolhead housing deform from the force, STOP: Something is out of position.



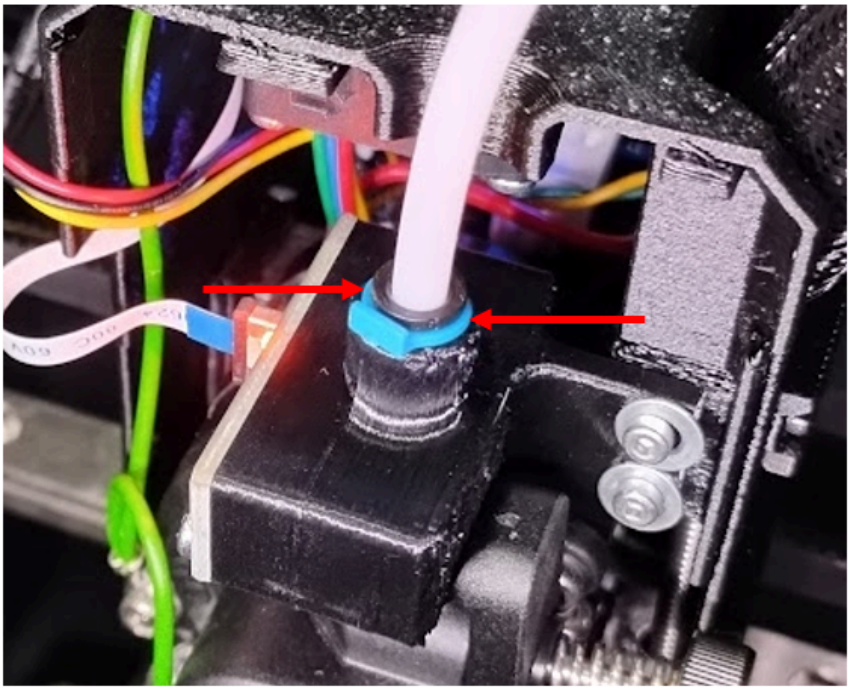
6. Install the new M2x6 SHCS + M3 washers. Hold the filament monitor square relative to the extruder body (in all 3 axes of rotation) as you tighten the screws finger tight. If you have **blue plastic safe thread locker** on hand, a dab on each screw is a good idea.



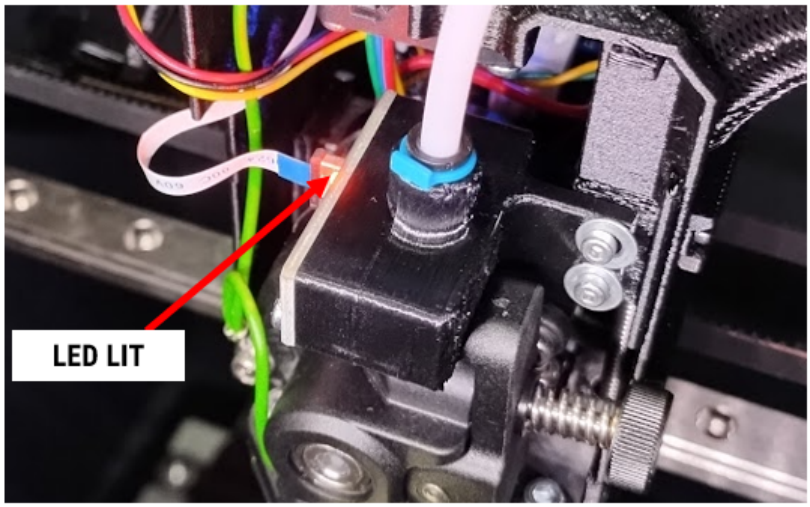


7. The filament monitor won't work correctly (will throw false feed errors) if it's not properly aligned with the filament path. So take your time with these steps.
    a. Sometimes it can be a good idea to load filament through the filament monitor and into the extruder to help align the filament path.
8. Once you're sure the filament monitor is oriented correctly, tighten the screws another ¼ turn.
9. Reinstall the filament feed tube and blue c-clip collar.
    a. Make sure you have the tube fully inserted into the fitting before installing the collar. Give it a gentle tub upward to check that it's locked in.

b. Make sure both legs of the blue collar are under the release collar (black).



10. Power on and confirm you see an orange LED light up on the filament monitor. If yes, power off and continue. If no, check your ribbon cable wiring.



11. Reinstall the front toolhead housing.

TESTING

1. Power the printer on and push filament thru the feed tube as you would normally to load filament. **PLEASE use normal PLA or ABS to reduce the number of variables in play**.

2. Go to *Utilities > Console*. Type "**M98 P"0:/macros/fusion3/loadfil_verbose**" and press ENTER or SEND. This will run a debugging version of our load filament macro that puts some debug information on the console.
    a. Some earlier printers won't have this file. If you see an error about "file not found", skip this step
3. Once the print head is up to temperature, select OK and do your normal load filament things.
4. **If the load filament macro exits with an error:**
    a. Confirm that your filament is actually grabbed and moving.
    b. Run the macro twice more.
    c. If you still have problems, either replacing the filament monitor didn't fix your original problem, or the filament monitor is not installed correctly and the encoder isn't turning. Please reach out to our customer support team for more assistance.
5. If load filament is successful, try to run a print. If this is successful, you're good to go!
6. If you encounter feed issues during a print, try adjusting the filament monitor's position. You can often do this while the print is paused, without unloading filament.

STILL NEED HELP?

Contact our support team:

support@fusion3design.com

https://www.fusion3design.com/contact-support/

877-452-0010 x2